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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DOUGLAS, JOHN CHRISTOPHER

ART UNIT PAPER NUMBER

1764

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/623,167	Applicant(s) SALMON, EMIGDIO JESUS	
	Examiner John C. Douglas	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 25-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) 2, 13 and 20 is/are objected to.
- 8) ☒ Claim(s) 1-33 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/18/03 + 10/14/03 + 1/7/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on 5/5/2006 is acknowledged. The traversal is on the ground(s) that there would be no "serious burden" on the Examiner to search the claims together. This is not found persuasive because the additional search and office action relating to the unelected apparatus claims would amount to an office action on an entirely new application but would be treated as uncounted work. Thus, the additional examination of the unelected claims would be a "serious burden" to the examiner.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. Claims 2, 13, and 20 are objected to because of the following informalities: the use of one absorber in performing two separation steps is unclear. Appropriate correction is required.
3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the use of an absorber for cooling and separation is not disclosed in the specification and the claim is unclear as to how the separation is achieved in one absorber.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the absorber must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. Claims 2, 13, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 2, 13, and 20 recite the limitation "absorber" in the respective claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. Claims 1, 3-6, 9, 11, 12, 17, 18, 19, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malloy (US 2940921).

Art Unit: 1764

10. With respect to claim 1, Malloy discloses reacting a hydrocarbon in a first reactor, cooling and separating the reactor effluent into a C6- fraction and a C7+ fraction, cooling and separating the C6- fraction into a C5-C6 fraction and a C4- fraction, heating the C4-fraction and sending it to a second reactor, combining the C7+ fractions from both separation zones where the C7+ fractions is cooled and ultimately arrive at a reformat pool (see Malloy, column 2, lines 9-12, column 2, line 45 – column 3, line 17 and Figure).

11. With respect to claim 3, Malloy discloses everything in claim 1, but does not disclose where the first reactor effluent stream is cooled by heat exchange contact with the second vapor stream. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include where the first reactor effluent stream is cooled by heat exchange contact with the second vapor stream instead of a cooler in order to reduce heating and cooling costs by cooling the reactor effluent with the second vapor and heating the second vapor with the reactor effluent.

12. With respect to claims 4 and 5, Malloy discloses where the hydrocarbon feed boils between 80 and 400 degrees F (pentane to decane boils approximately between 80 and 400 degrees F) (see Malloy, column 2, lines 9-10).

13. With respect to claim 6, Malloy discloses where the hydrocarbon feed is heated to between about 950 to about 1050 degrees F and is under a pressure of about 50 to about 750 psig (see Malloy, column 2, lines 9-26).

14. With respect to claims 9 and 17, Malloy discloses where the feed to the second reactor is heated to 900 degrees F (see Malloy, column 1, lines 66-72).

15. With respect to claims 11, 18, and 23, Malloy does not disclose controlling the step of cooling the first reactor stream based upon a first discharge temperature of the first cooler and a second discharge temperature of the second cooler. However, the court in *In re Venner*, 262 F.2d 91, 95 (CCPA 1958), held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art. Claims 11, 18, and 23 simply disclose a method of controlling the reactor effluent by reading the discharge temperatures of the first and second reactor, which would be automating a process that could be performed manually by reading the temperatures and adjusting the process accordingly. Therefore, it would have been obvious to modify the process of Malloy to include controlling the first reactor effluent stream.

16. With respect to claim 12, Malloy discloses reacting the second vapor stream in the second reactor to produce a second reactor effluent stream. Malloy does not disclose cooling and separating the second reactor effluent into a C6- fraction and a C7+ fraction, cooling and separating the C6- fraction into a C5-C6 fraction and a C4- fraction, heating the C4-fraction and sending it to a third reactor, combining the C7+ fractions from both separation zones where the C7+ fractions is cooled and ultimately arrive at a reformat pool.

However, Malloy discloses cooling and separating the first reactor effluent into a C6- fraction and a C7+ fraction, cooling and separating the C6- fraction into a C5-C6

Art Unit: 1764

fraction and a C4- fraction, heating the C4-fraction and sending it to a second reactor, combining the C7+ fractions from both separation zones where the C7+ fractions is cooled and ultimately arrive at a reformat pool (see Malloy, column 2, lines 9-12, column 2, line 45 – column 3, line 17 and Figure).

According to *In re Harza*, 274 F.2d 669 (CCPA 1960), the mere duplication of parts has no patentable significance unless a new or unexpected result is produced (see MPEP §2144.04 VI. C.). In this case the duplication of parts is the duplication of the separation sequence following the first reactor to be performed following the second reactor. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include cooling and separating the second reactor effluent into a C6- fraction and a C7+ fraction, cooling and separating the C6- fraction into a C5-C6 fraction and a C4- fraction, heating the C4-fraction and sending it to a third reactor, combining the C7+ fractions from both separation zones where the C7+ fractions is cooled and ultimately arrive at a reformat pool because such a modification is in effect a duplication of parts and is therefore prima facie obvious.

17. With respect to claim 19, Malloy discloses reacting a hydrocarbon in a first reactor, cooling and separating the reactor effluent into a C6- fraction and a C7+ fraction, cooling and separating the C6- fraction into a C5-C6 fraction and a C4- fraction, heating the C4-fraction and sending it to a second reactor, combining the C7+ fractions from both separation zones where the C7+ fractions is cooled and ultimately arrive at a

Art Unit: 1764

reformat pool (see Malloy, column 2, lines 9-12, column 2, line 45 – column 3, line 17 and Figure).

Malloy does not disclose sending a second portion of the second vapor stream to a third reactor and combining the effluent of the first and second reactors before the effluent stream is cooled.

However, according to *In re Burhans* 154 F.2d 690 (CCPA 1946), the selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results.

In the instant case the difference between claim 19 and the prior art is that the second vapor enters the third reactor after it exits the second reactor and part of the effluent of the third reactor combines with part of the effluent of the first reactor (see Malloy, figure). Thus, the difference between Malloy and claim 19 is the sequence adding the second vapor stream to the third reactor and the stage at which the first and second reactor effluent are combined. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include sending a second portion of the second vapor stream to a third reactor and combining the effluent of the first and second reactors before the effluent stream is cooled because such a modification is a change in the order of performing process steps and thus is prima facie obvious in the absence of new or unexpected results.

18. With respect to claim 24, Malloy discloses everything in claim 19, but does not disclose where the first reactor includes a series of reformer reactors. However, According to *In re Harza*, 274 F.2d 669 (CCPA 1960), the mere duplication of parts has

Art Unit: 1764

no patentable significance unless a new or unexpected result is produced (see MPEP §2144.04 VI. C.). In this case the duplication of parts is the duplication of the first reactor into a chain of reactors in series. Therefore, it would be obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include where the first reactor includes a series of reformer reactors because such a modification is a duplication of parts and is therefore prima facie obvious.

19. Claims 2, 13, and 20 where interpreted as best as possible and are rejected under 35 U.S.C. 103(a) as being unpatentable over Malloy in view of Rambo (US 5890378). Malloy discloses everything in claim 1, 12, and 19, but does not disclose where the cooling and separating steps are performed in an absorber.

However, Rambo discloses an absorber that cools and separates a liquid feed into a vapor stream and a liquid stream (see Rambo, column 6, lines 46-57 and column 10, line 64 – column 11, line 13).

Rambo discloses that an absorber is used to condense and absorb the heavier components (see Rambo, column 6, lines 51-55).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include an absorber that cools and separates a liquid feed into a vapor stream and a liquid stream in order to condense the heavy components of the feed.

20. Claims 7, 8, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malloy in view of Swan (US 5203988). Malloy discloses everything in

Art Unit: 1764

claims 1 and 12, but does not disclose where the coolers are operated to cool the streams to about 250 to about 360 degrees F.

However, Swan discloses cooling the reaction product in the range from about 100 to about 300 degrees F (see Swan, column 6, lines 1-5).

Swan discloses that such a temperature is generally used to achieve aromatics separation (see Swan, column 6, lines 1-8).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include cooling the reaction product in the range from about 100 to about 300 degrees F in order to achieve aromatics separation.

21. Claims 10, 14, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Malloy in view of Choi (US 4401554). Malloy discloses everything in claims 1, 12, and 19, but does not disclose supplying a portion of the hydrocarbon feed to the second or third reactor as a second or third hydrocarbon feed stream.

However, Choi discloses where a portion of the feed is fed to a subsequent reactor (see Choi, column 6, lines 8-18).

Choi discloses that feeding a portion to the third reactor results in a lower average partial pressure, thereby improving benzene-toluene-xylene yield (see Choi, column 6, lines 8-18).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Malloy to include where a portion of

Art Unit: 1764

the feed is fed to a subsequent reactor in order to improve benzene-toluene-xylene yield.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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